^{238}U(^{12}C,Fγ) 2014As01

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Zoltan Elekes and Janos Timar	NDS 129, 191 (2015)	28-Feb-2015

E(^{12}C)=90 MeV, E(^{18}O)=85 MeV. Targets=47 mg/cm^2 ^{238}U and 100 mg/cm^2 ^{208}Pb. Measured Eγ, Iγ, $\gamma\gamma$-coincidence, level half-lives by delayed coincidence techniques using SAPhIR and Euroball arrays at Legnaro XTU accelerator for ^{12}C beam and IReS Vivitron facility in Strasbourg. Deduced levels, J, π. Comparison with shell-model calculations.

^{128}Te Levels

E(level)	J$^\pi$	T$_{1/2}$	Comments
0.0†	0^+		
743.00† *20*	2^+		
1496.5† *3*	4^+		
1810.1† *3*	6^+		
2132.5 *5*	5^-		
2336.4# *5*	$(7)^-$		
2454.9 *7*			
2687.6 *5*	(8^+)		
2788.9 *5*	(10^+)	236 ns *20*	T$_{1/2}$: from γ(t) (2014As01).
2965.6 *6*	(8^-)		
3149.5# *6*	(9^-)		
3506.1‡ *6*	(12^+)		
3635.7 *7*			
3712.5# *6*	(11^-)		
4033.7 *7*			
4169.6 *8*			
4263.2@ *7*			
4339.6# *6*	(13^-)		
4428.7‡ *7*	(14^+)		
4525.3@ *8*			
4665.7 *7*	(14^-)		
4726.5 *7*	(15^-)		
5075.5@ *9*			
5433.3 *8*			
5445.2‡ *9*			
5542.8@ *11*			
5944.2 *9*			
6209.3‡ *11*			

† Band(A): γ sequence, yrast structure.
‡ Band(B): γ sequence based on 10^+ isomer.
# Band(C): γ sequence based on 7^- isomer.
@ Band(D): γ sequence based on (13^+).

^{238}U(^{12}C,Fγ) 2014As01 (continued)

γ(^{128}Te)

R=angular correlation yield at different angles.

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.[†]	α[#]	Comments
101.3 *3*	17 *4*	2788.9	(10^+)	2687.6	(8^+)	E2	1.6	
262.1 *4*	3.5 *14*	4525.3		4263.2				
313.6 *2*	80 *12*	1810.1	6^+	1496.5	4^+	E2		(313.6γ)(753.5γ)(θ): R(22°)=1.14 *5*, R(46°)=1.07 *5*, R(75°)=1.00. (313.6γ)(743.0γ)(θ): R(22°)=1.13 *5*, R(46°)=1.06 *5*, R(75°)=1.00.
322.4 *5*	1.8 *9*	2454.9		2132.5	5^-			
326.0 *4*	6.2 *19*	4665.7	(14^-)	4339.6	(13^-)	D[‡]		(326.0γ)[833.5γ](717.1γ)(θ): R(22°)=0.85 *8*, R(46°)=0.95 *6*, R(75°)=1.00.
387.0 *4*	5.4 *22*	4726.5	(15^-)	4339.6	(13^-)	Q[‡]		(387.0γ)[833.5γ](717.1γ)(θ): R(22°)=1.12 *8*, R(46°)=1.05 *5*, R(75°)=1.00.
457.1 *5*	2.8 *14*	4169.6		3712.5	(11^-)			
467.3 *5*	1.0 *5*	5542.8		5075.5				
526.3 *3*	28 *6*	2336.4	$(7)^-$	1810.1	6^+	E1+M2		(526.3γ)(313.6γ)(θ): R(22°)=0.88 *6*, R(46°)=0.97 *6*, R(75°)=1.00. Mult.: γγ(θ) in 2014As01 gives D.
527.6 *4*	5.6 *17*	4033.7		3506.1	(12^+)			
550.2 *5*	1.6 *8*	5075.5		4525.3				
563.1 *4*	10 *3*	3712.5	(11^-)	3149.5	(9^-)	Q[‡]		(563.1γ)[813.1γ][526.3γ](313.6γ)(θ): R(22°)=1.19 *12*, R(46°)=1.10 *8*, R(75°)=1.00.
627.1 *5*	4.0 *16*	4339.6	(13^-)	3712.5	(11^-)			
629.2 *4*	8 *2*	2965.6	(8^-)	2336.4	$(7)^-$	D[‡]		(629.2γ)[526.3γ](313.6γ)(θ): R(22°)=0.86 *8*, R(46°)=0.92 *7*, R(75°)=1.00.
636.0 *4*	12 *4*	2132.5	5^-	1496.5	4^+			
670.1 *4*	4.1 *16*	3635.7		2965.6	(8^-)			
706.9 *5*	2.9 *14*	5433.3		4726.5	(15^-)			
717.1 *3*	40 *8*	3506.1	(12^+)	2788.9	(10^+)	Q[‡]		(717.1γ)[101.3γ][877.5γ](313.6γ)(θ): R(22°)=1.18 *5*, R(46°)=1.06 *5*, R(75°)=1.00. (717.1γ)[101.3γ][877.5γ][313.6γ][753.5γ](743.0γ)(θ): R(22°)=1.15 *5*, R(46°)=1.10 *5*, R(75°)=1.00.
743.0 *2*	100	743.00	2^+	0.0	0^+	E2		
753.5 *2*	95 *14*	1496.5	4^+	743.00	2^+	E2		
757.1 *4*	7 *2*	4263.2		3506.1	(12^+)			
764.1 *7*	1.9 *9*	6209.3		5445.2				
767.6 *5*	4.8 *19*	5433.3		4665.7	(14^-)			
813.1 *4*	15 *4*	3149.5	(9^-)	2336.4	$(7)^-$	Q[‡]		(813.1γ)[526.3γ](313.6γ)(θ): R(22°)=1.12 *9*, R(46°)=1.05 *5*, R(75°)=1.00.
833.5 *4*	18 *4*	4339.6	(13^-)	3506.1	(12^+)	D[‡]		(833.5γ)(717.1γ)(θ): R(22°)=0.80 *1*, R(46°)=0.90 *5*, R(75°)=1.00.
877.5 *3*	48 *10*	2687.6	(8^+)	1810.1	6^+	Q[‡]		(877.5γ)(313.6γ)(θ): R(22°)=1.13 *6*, R(46°)=1.04 *6*, R(75°)=1.00.
922.6 *4*	10 *3*	4428.7	(14^+)	3506.1	(12^+)	Q[‡]		(922.6γ)(717.1γ)(θ): R(22°)=1.12 *8*, R(46°)=1.08 *7*, R(75°)=1.00.
1016.5 *5*	3.2 *15*	5445.2		4428.7	(14^+)			
1217.7 *6*	1.8 *9*	5944.2		4726.5	(15^-)			

[†] From Adopted Gammas unless otherwise noted.

[‡] From γγ(θ) data, mult.=Q corresponds to ΔJ=2, most likely E2, mult.=D corresponds to ΔJ=1.

Continued on next page (footnotes at end of table)

^{238}U(^{12}C,Fγ) 2014As01 (continued)

γ(^{128}Te) (continued)

[#] Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.

^{238}U(^{12}C,Fγ) **2014As01**

Level Scheme

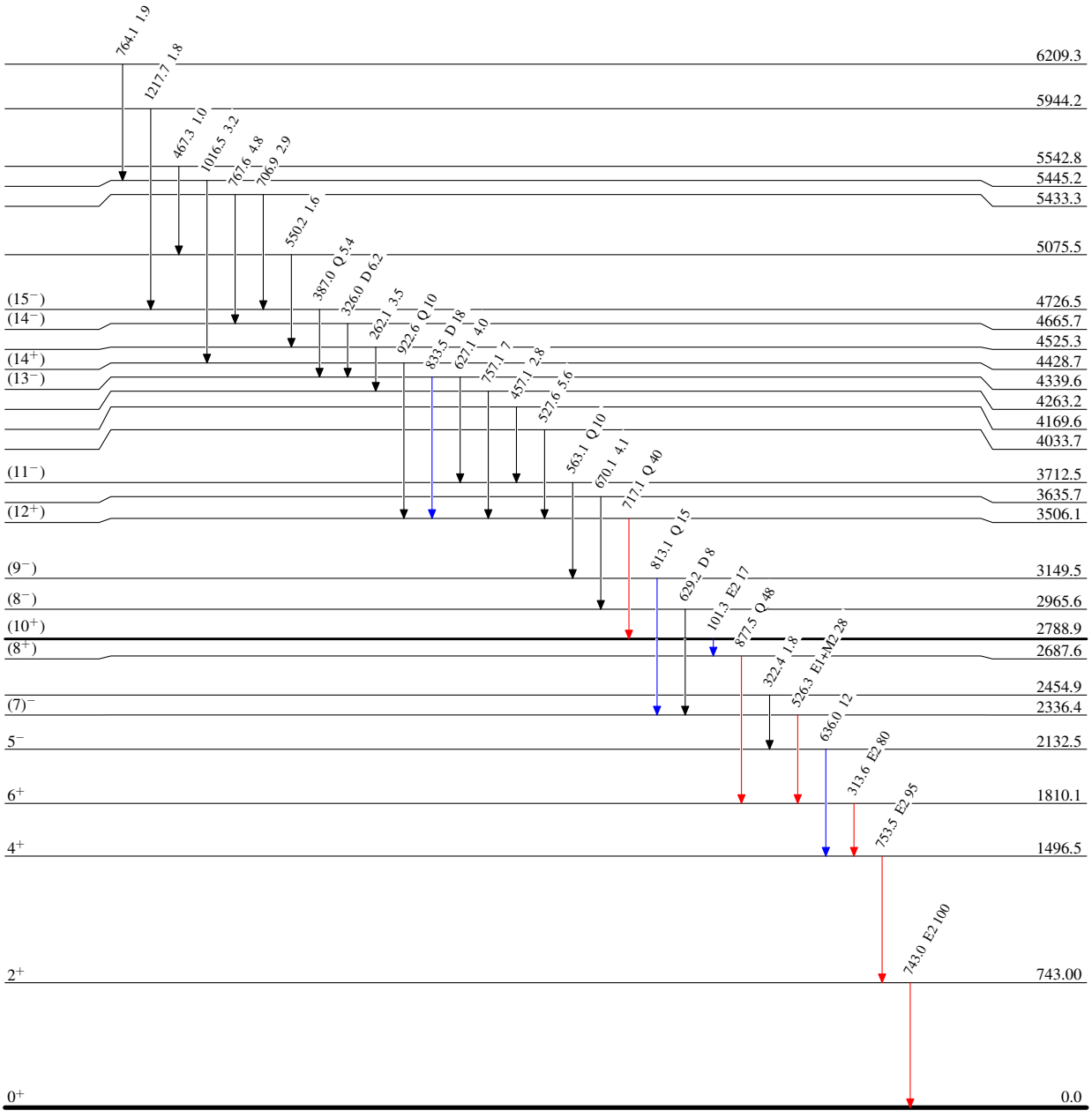
Intensities: Relative I_γ

Legend

$I_\gamma < 2\% \times I_\gamma^{max}$

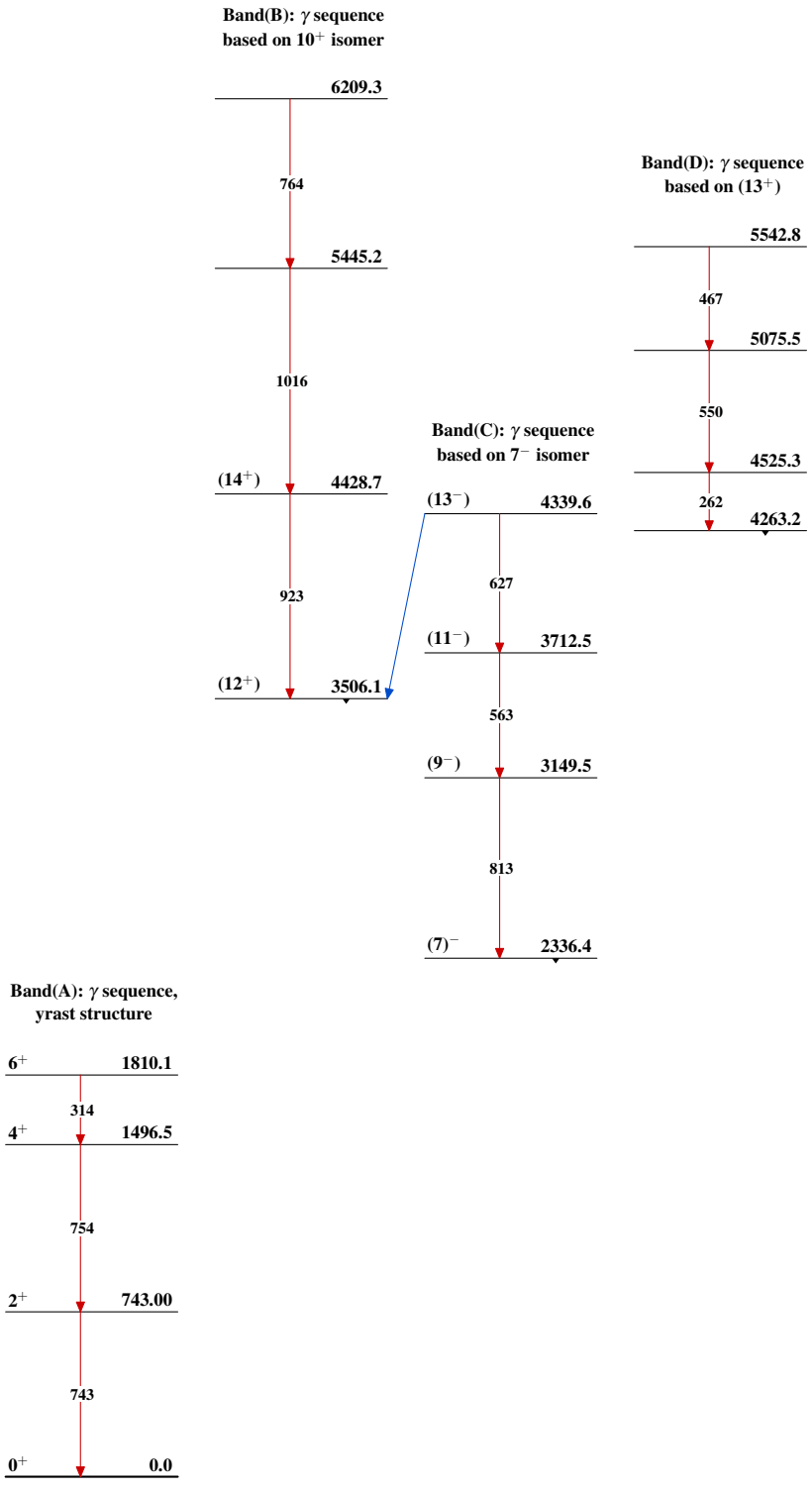
$I_\gamma < 10\% \times I_\gamma^{max}$

$I_\gamma > 10\% \times I_\gamma^{max}$



$^{128}_{52}Te_{76}$

$^{238}U(^{12}C,F\gamma)$ 2014As01



$^{128}_{52}Te_{76}$